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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,104	10/19/2001	Chun-Keng Hsu	67,200-531	8828

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EXAMINER

CHIN, PAUL T

ART UNIT PAPER NUMBER

3652

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s) M	
	10/040,104	HSU ET AL.	
	Examiner	Art Unit	
	PAUL T. CHIN	3652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-20 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1,2 and 4-20 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The applicant's amendment filed July 26, 2004, and the arguments presented therewith have been carefully considered. Regarding Park et al. in view of Chen et al., the argument is persuasive and the claim rejections made have been withdrawn. However, the arguments on Park et al. in view of Hajdukiewicz et al. or Park et al. in view of Westervelt et al. are not persuasive and claims 1,2, and 4-20 remains rejected. Therefore, THIS ACTION IS MADE FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,4-7, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (U.S. Patent Application Publication 2001/0051088) in view of Hajdukiewicz et al. (4,813,151).

Park et al. ('088) discloses a wafer pickup system comprising a wafer blade (32) (see Figs. 5,6, and 8) having a blade body with an elongated shape which has a top surface, and a bottom surface (34); the wafer blade having a fork shape in the distal end (see Fig. 4) and also having a substantially rectangular shape in the base area (see Fig. 4); and a tactile sensor or a strain sensor (43,63), which is a thin film (Re claim 7), mounted on the bottom surface (34) of the blade body. Park et al.' wafer pickup system ['088] does not show *the strain sensor is sensitive to at least 1 micrometer displacement.*

However, Hajdukiewicz et al. (4,813,151) shows a *strain gauge or sensor* (46) (Fig. 3) having a high sensibility for measuring the movement of from -0.5 microns to 2 microns (see Col 4, lines 10-24) wherein the sensor is connected to an electrical circuit (50) for producing a trigger signal (Col 4, lines 41-61).

Accordingly, it would have been an obvious to one of the ordinary skill in the art at the time the invention was made to provide a *strain gauge or sensor* at the bottom surface of the blade of Park et al.' wafer pickup system ['088] as taught by Hajdukiewicz et al. (4,813,151) in order to detect a small displacement of the sensor.

Re claim 6, the modified Park et al.'s wafer pickup system ['088] discloses that the blade body is being made of metal (page 1, second column, the third paragraph) or a ceramic (page 1, second column, the fourth paragraph).

Re claims 14 and 18, the modified Park et al.'s wafer pickup system ['088] further shows an alarm system or device (page 2, the second column, lines 1-6) receiving signals from the sensors to a controller (46).

Re claims 15 and 16, the modified Park et al.'s wafer pickup system ['088] shows the wafer blade having a fork shape in the distal end (see Fig. 4) and also having a substantially rectangular shape in the base area (see Fig. 4).

Re claim 17, the modified Park et al.'s wafer pickup system ['088] shows the alarm system receiving an electric current or signals produced by the sensors (page 2, the first column, the last paragraph) when a strain is detected.

Re claim 19, Park et al.'s wafer pickup system ['088] shows that the alarm system could be a visual system such as a warning light (page 2, the second column, lines 1-6).

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4. Claims 1,2, and 4-20, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Park et al. (U.S. Patent Application Publication 2001/0051088)** in view of **Westervelt et al. (5,663,507)**.

Park et al. ('088) discloses a wafer pickup system comprising a wafer blade (32) (see Figs. 5,6, and 8) having a blade body with an elongated shape which has a top surface, and a bottom surface (34); the wafer blade having a fork shape in the distal end (see Fig. 4) and also having a substantially rectangular shape in the base area (see Fig. 4); and a tactile sensor or a strain sensor (43,63), which is a thin film (Re claim 7), mounted on the bottom surface (34) of the blade body. **Park et al.' wafer pickup system ['088]** does not show *the strain sensor is sensitive to at least 1 micrometer displacement*.

However, **Westervelt et al. (5,663,507)** shows a *semiconductor piezoelectric strain device* (see Fig. 2) to achieve the levels of sensitivity beyond the prior art enabling greater application of the sensors to micron and sub-micron system (see Col 3, lines 26-37) providing a strain sensitivity of 2×10^{-9} (see Col 7, lines 14-52).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide *the piezoelectric strain sensor* at the bottom surface of the blade of **Park et al.' wafer pickup system ('088)** as taught by **Westervelt et al. (5,663,507)** in order to detect the distortion of the blade or the outside pressured force.

Re claims 6 and 11, the modified **Park et al.'s wafer pickup system ['088]** discloses that the blade body is being made of metal (page 1, second column, the third paragraph) or a ceramic (page 1, second column, the fourth paragraph).

Re claims 14 and 18, the modified **Park et al.'s wafer pickup system ['088]** further shows an alarm system or device (page 2, the second column, lines 1-6) receiving signals from

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the sensors to a controller (46).

Re claims 15 and 16, the modified Park et al.'s wafer pickup system ['088] shows the wafer blade having a fork shape in the distal end (see Fig. 4) and also having a substantially rectangular shape in the base area (see Fig. 4).

Re claim 17, the modified Park et al.'s wafer pickup system ['088] shows the alarm system receiving an electric current or signals produced by the sensors (page 2, the first column, the last paragraph) when a strain is detected.

Re claims 19 and 20, Park et al.'s wafer pickup system ['088] shows that the alarm system could be a visual system such as a warning light (page 2, the second column, lines 1-6).

Response to Arguments

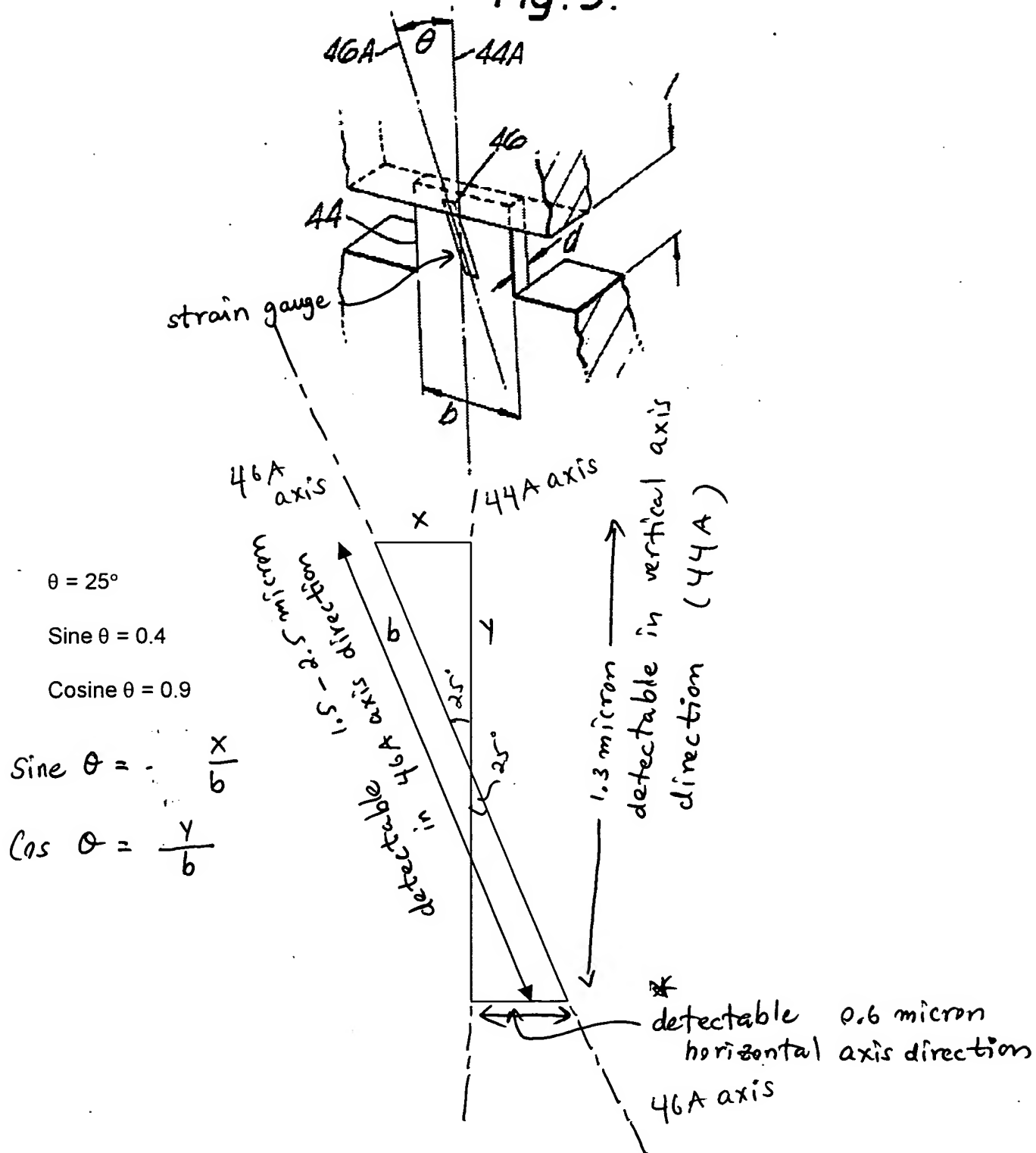
5. Applicant's arguments filed July 26, 2004, have been fully considered and are persuasive. Regarding Park et al. in view of Chen et al., the argument is persuasive and the claim rejections made have been withdrawn. However, the arguments on Park et al. in view of Hajdukiewicz et al. or Park et al. in view of Westervelt et al. are not persuasive.

Applicant argues that "Hajdukiewicz et al. does not teach a sensor capable of detecting to a sensitivity of at least 1 micron displacement" (page 8). The arguments are not persuasive. Hajdukiewicz et al. shows a sensor (46) in the form of strain gauge capable of detecting a movement of two microns, plus or minus 0.5 micron (from Col 3, line 61, to Col 4, line 24) in the axis (46A) (see Fig. 3) as to whether the strain is tensile, compressive, or torsional or any combination thereof. It is pointed out that the strain gauge of Hajdukiewicz et al. is capable of detecting at least detectable at least 1.5 micron in the 46A axis direction, which is 25 degree angle from a vertical axis (44A) (see Fig. 3), is also capable of detecting at least 0.6 micron in the horizontal axis direction,

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which is perpendicularly to the axis (44A) (if calculated as 1.5 micron multiplied by Sine 25, which is 0.4).

Fig. 3.



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Moreover, in response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art.. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Hajdukiewicz et al. shows a sensor (46) in the form of strain gauge capable of detecting the movement of the gauge and it would have been an obvious to one of the ordinary skill in the art at the time the invention was made to provide a *strain gauge or sensor* at the bottom surface of the blade of Park et al.' wafer pickup system ['088] as taught by Hajdukiewicz et al. (4,813,151) in order to detect a small displacement of the sensor.

Further, applicant argues that "Westervelt et al. does not teach a sensor capable of detecting to a sensitivity of at least 1 micron displacement" (page 10). The argument is not persuasive because Westervelt et al. (5,663,507) shows a *semiconductor piezoelectric strain device* (see Fig. 2) to achieve the levels of sensitivity beyond the prior art enabling greater application of the sensors to micron and sub-micron system (see Col 3, lines 26-37) providing a strain sensitivity of 2×10^{-9} (see Col 7, lines 14-52). Moreover, the reference shows that

"strain measuring transducers of the present invention are low noise and are capable of detecting volume of strains ϵ on the order of 2×10^{-9} /Hz or less" (Col 3, lines 11-37) wherein the Hz refers to a noise.

Applicant continues to argue that "the strain gauge of Westervelt et al. are only capable of measuring a unit-less quantity of strain, but not in units of microns (i.e. at least 1

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micron) displacement". The argument is not persuasive because Westervelt et al. clearly shows that

"the strain measuring transducers fabricated from piezoelectric material or strain sensors" (Col 3, lines 17-37) and

"the present inventions have advantageous applications wherever displacements are required to sense or measure (Col 3, lines 38-40).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hertel et al. (4,744,709) shows a load sensing device including a strain gauge to provide an output signal (see Figs. 5a-c).

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL T. CHIN whose telephone number is (703) 305-1524. The examiner can normally be reached on MON-THURS (7:30 -6:00 PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, EILEEN LILLIS can be reached on (703) 308-3248. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ptc

PTC
October 14, 2004



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SUPERVISORY PATENT EXAMINER
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